
Appendix A: Determining the Meridian 1 call center capacity (Quick Guide)

This chapter lets you quickly and simply determine whether a particular Meridian 1 system will have sufficient capacity for typical call center applications.

You can use this section when you want to

- determine the feasibility of using a particular Meridian 1 system for typical call center configurations
- understand possible limits and impacts of using particular Meridian 1 call center services
- plan potential expansions of call center applications
- illustrate the kind of flexibility the Meridian 1 call center solutions provide

Do not use this section when traffic or usage assumptions vary dramatically from those listed in the following assumptions. If these assumptions do not apply to your situation, use the Meridian Configurator for engineering.

Assumptions

- CPU real time is the only limiting resource considered in the attached charts for both the Meridian 1 and the application (physical or other constraints are not considered).
- For small systems (Option 11E, 21E or 51), the capacity limitation may be physical, not real time. Refer to the *Meridian 1 System Planning and Engineering Guide* (P0744197).

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- An adequate and balanced number of trunks will be provided. The number of trunks provided for call center agent use will be approximately 120% of the number of agents and the number of trunks provided for non-call-center use will be approximately 10% of the number of non-call-center sets.
- 50% of non-call-center calls are intra-office calls, and 50% are incoming or outgoing calls.
- CCR calls use a basic script, including one cycle of RAN and music. No statistic messages on ACD DN's are turned on.
- Every feature call is assumed to invoke all features under consideration (CCR plus MAX plus incoming CDR)
- The average holding time is
 - 60 seconds per agent call
 - 150 seconds per non-agent call
- The average usage is 30 CCS per agent (= 50 calls/agent/hour), and 6 CCS per set (= 4 calls/set/hour)
- The average holding time per Meridian Mail port is 60 seconds.
- The capacity of each Meridian Mail system is 96 ports. If more capacity is required, multiple Meridian Mail systems will be used with some capability limitations between Meridian Mail systems.

All examples in this Appendix are based on the above assumptions. Users should not use the charts for capacity estimation if their applications do not have similar characteristics as those described in the assumptions.

Before you start

In combined call centers, Meridian 1 must provide sufficient call-processing capacity for call-center users and for non-call-center users. The amount of call-processing capacity required for call-center applications also depends on which Meridian 1 call-center services (such as CCR, MAX, Meridian Link) are to be used.

You must estimate one of the following:

- the number of call-center calls and the number of non-call-center calls that will be expected during the busiest hour of the busiest season
- the number of call-center (ACD) agents and non-call-center users (sets) that will be using the system simultaneously in the busiest hour of the busiest season.

Using the busy-hour busy-season calling rates is more accurate than using agents and sets.

Call centers using CCR only

Use Figure 1 or 2 to determine the Meridian 1 Option required for call centers that use CCR for call routing but which are not equipped with MAX or Meridian Link.

If you have estimated the busy-season busy-hour calling rates, draw on Figure 1 a horizontal line depicting the (incoming) calling rates required for the call-center operation and a vertical line depicting the calling rates required for non-call-center users.

If you have estimated only the number of agents and the number of non-call-center users, draw on Figure 2 a horizontal line depicting the number of call center agents and a vertical line depicting the number of non-call-center users.

Find that point on the chart where the horizontal and vertical lines intersect. The label for the area where the points intersect indicates the Meridian 1 option required.

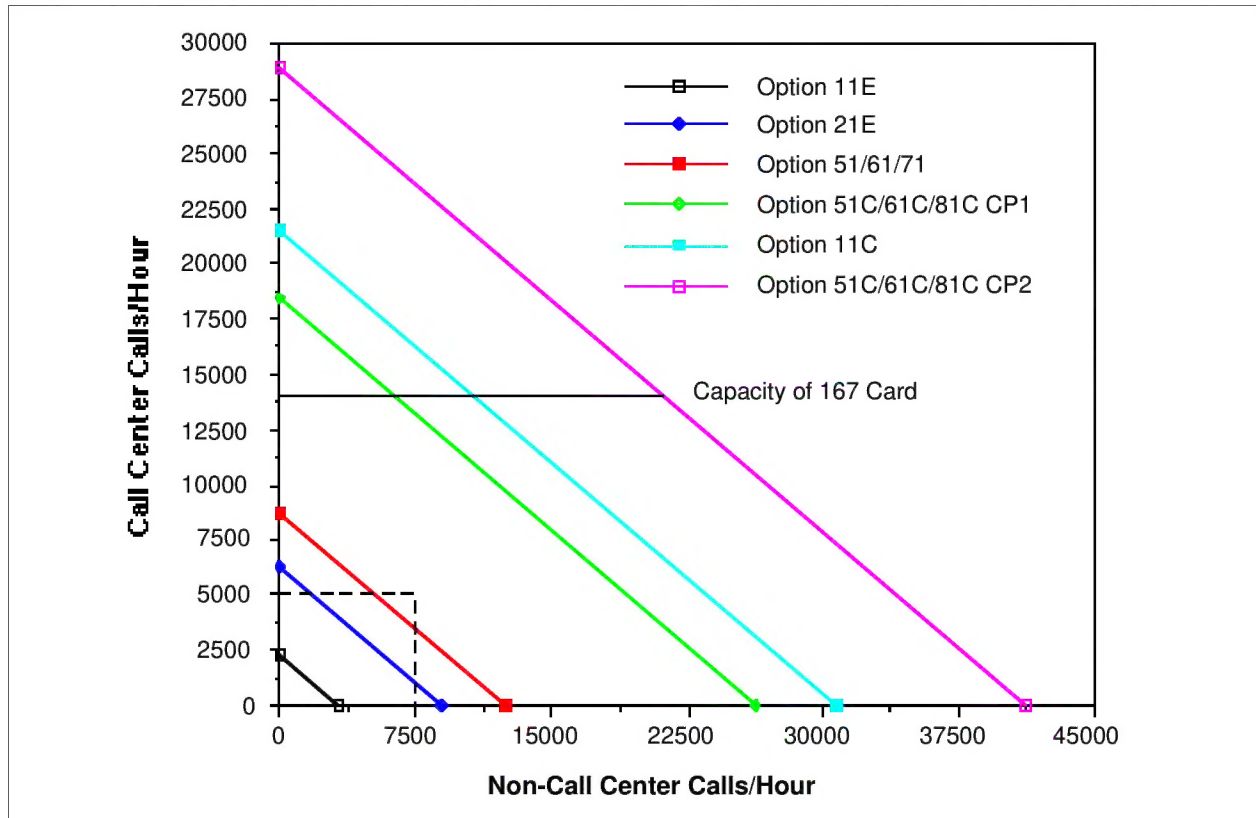
If the lines intersect in the area above the line denoting the highest capacity Meridian 1, a single Meridian 1 cannot handle the capacity. Consult a Nortel representative for alternatives. If the lines intersect above the line labeled "Capacity of a 167 Card," a Meridian 1 can handle the capacity, but a single IPE Module or MVME167-equipped Application Module may not. You should refer to Chapter 3, "Engineering the IPE Module and the Application Module."

Example 1

A call center using the CCR application is expected to handle 5000 call-center calls and 7500 non-call-center calls. Which Meridian 1 option is required?

Draw (Figure 1) a horizontal line through the point on the vertical axis indicating 5000 call-center calls. Draw a vertical line through the point on the horizontal axis indicating 7500 non-call-center calls. Figure 1 shows that the lines intersect in the Option 81 area indicating that an Option 81 is required to handle this configuration.

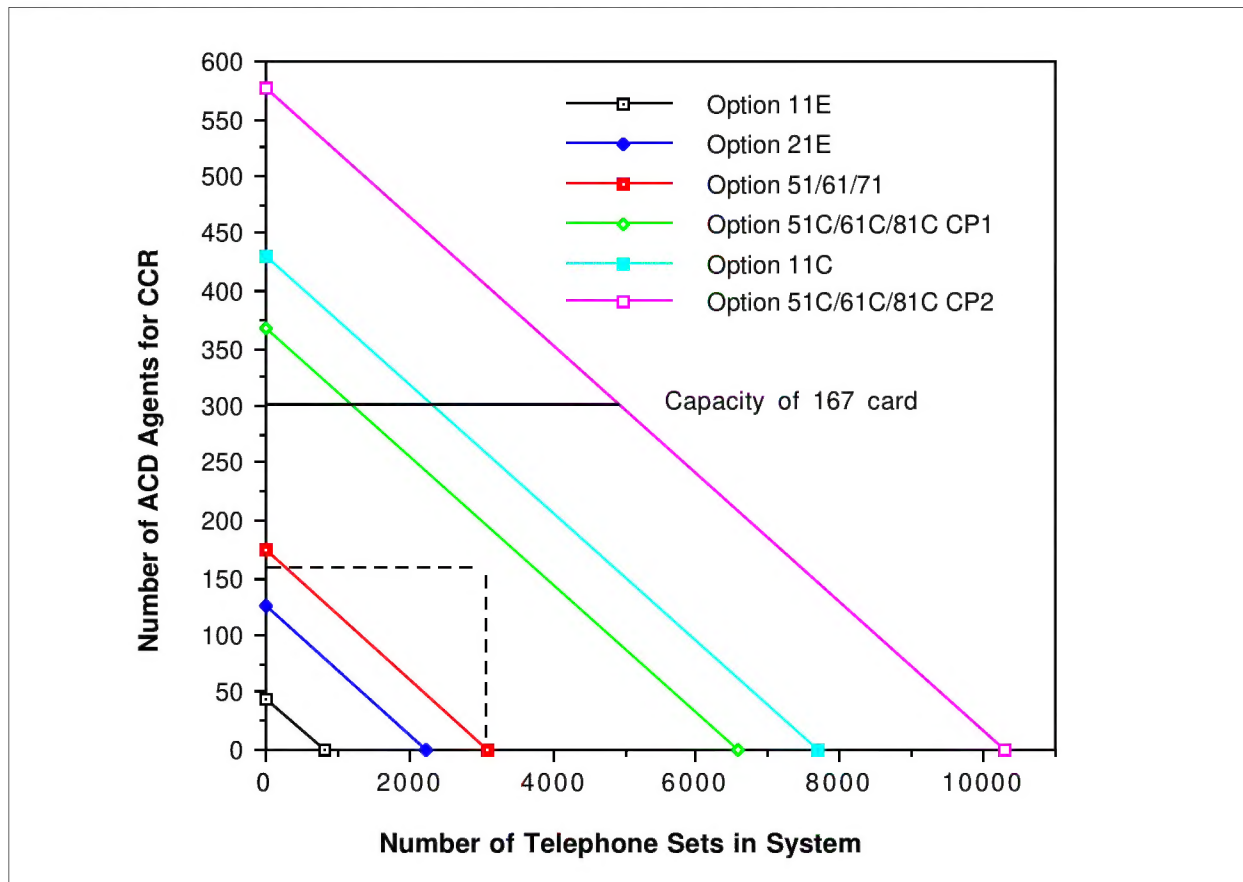
Figure 1
Meridian 1 real-time capacity for call center calls (CCR only) and non-call center calls

**Example 2**

A call center has 160 ACD agents and 3000 non-call-center telephone sets. Which Meridian 1 option is required to service it?

On Figure 2, draw a horizontal line through the point on the vertical axis representing 160 ACD agents. Draw a vertical line through a point on the horizontal axis representing 3000 non-call-center calls. The lines intersect in the Option 81 area indicating that an Option 81 is required to handle this configuration.

Figure 2
Meridian 1 real-time capacity for agents and sets with CCR (Release 22)



The classification of script complexity shown in Figure 2 is an approximation. Its purpose is to provide an estimate on the capacity impact of this parameter. Follow the procedure in Appendix D to calculate the complexity of the script and corresponding system capacity.

Impact of CCR script complexity on figures

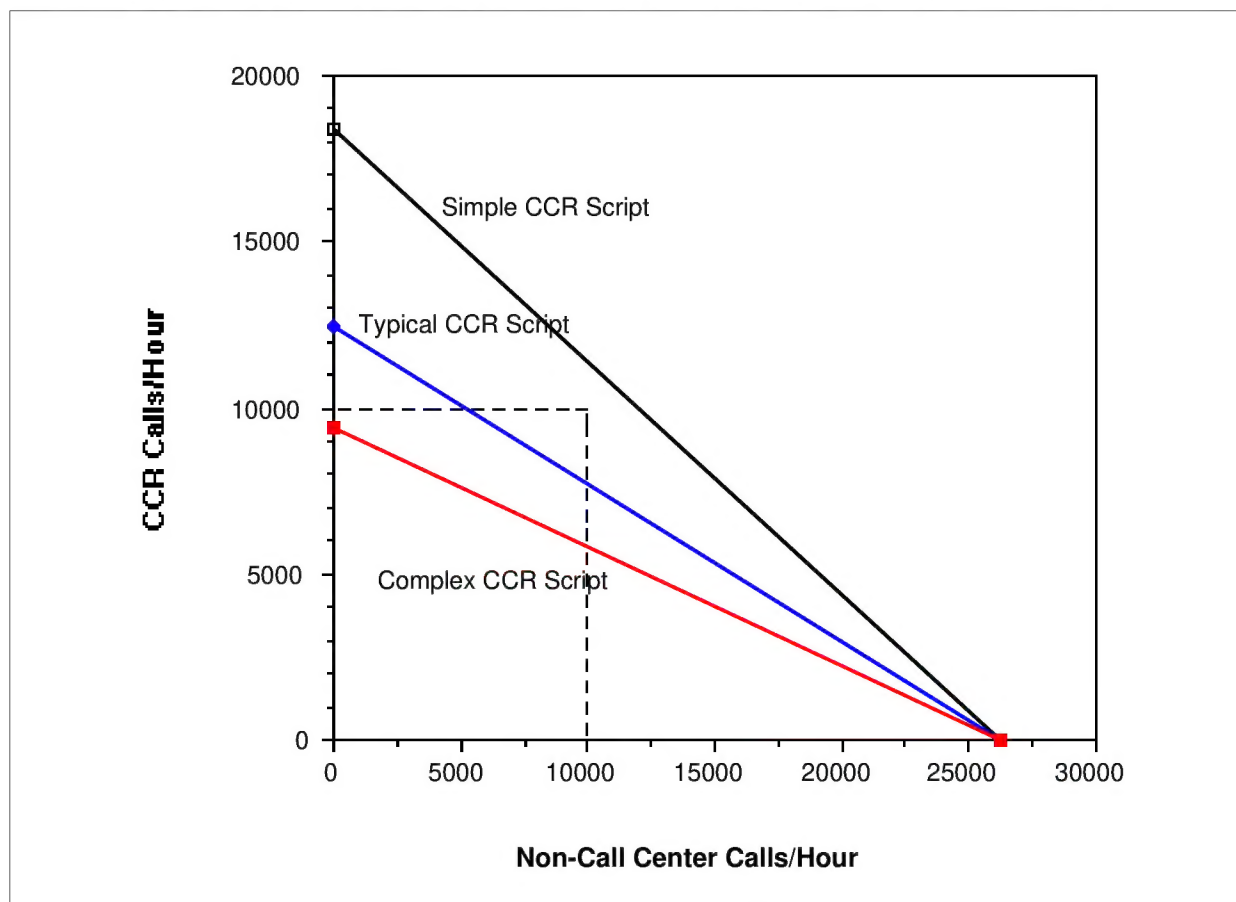
The CCR script used to produce figures in this quick guide is assumed to be a simple script, which takes only one real-time factor (refer to Table 16) per CCR call. In practical applications, it can be more complex. If we consider a call from a “typical” CCR script consuming two real-time factors, and a call from a “complex” CCR script requiring three real-time factors, the call capacity of a Meridian 1 CPU will be correspondingly reduced.

Since each CPU has three levels of capacity based on the complexity of the CCR script, a figure with six CPU types will be too complex to read. To show the sensitivity of the capacity curve for this parameter, a figure made up of an Option 81 with simple, typical, and complex CCR scripts is shown in Figure 3.

As an example, an Option 81 is expected to serve an application with 10,000 non-call center calls and 10,000 CCR calls per hour. Since the intersection of lines through these two points parallel to the x and y axis is between the lines for the simple and typical scripts, it indicates that an Option 81 can handle the given configuration with a simple CCR script but not with a typical CCR script.

Users should keep in mind that all charts in this guide involving CCR are based on a simple script. Adjustments need to be made to cover practical applications with more complex CCR scripts. The best way to do this is to follow the calculation procedure instead of using the simplified figures.

Figure 3
Meridian 1 (Option 81) real-time capacity for CCR calls based on script complexity



Example 3

A call center using CCR, MAX, and incoming CDR is expected to process 7,000 call-center calls and 6,000 non-call-center calls during the busy hour. What Meridian 1 Option is required?

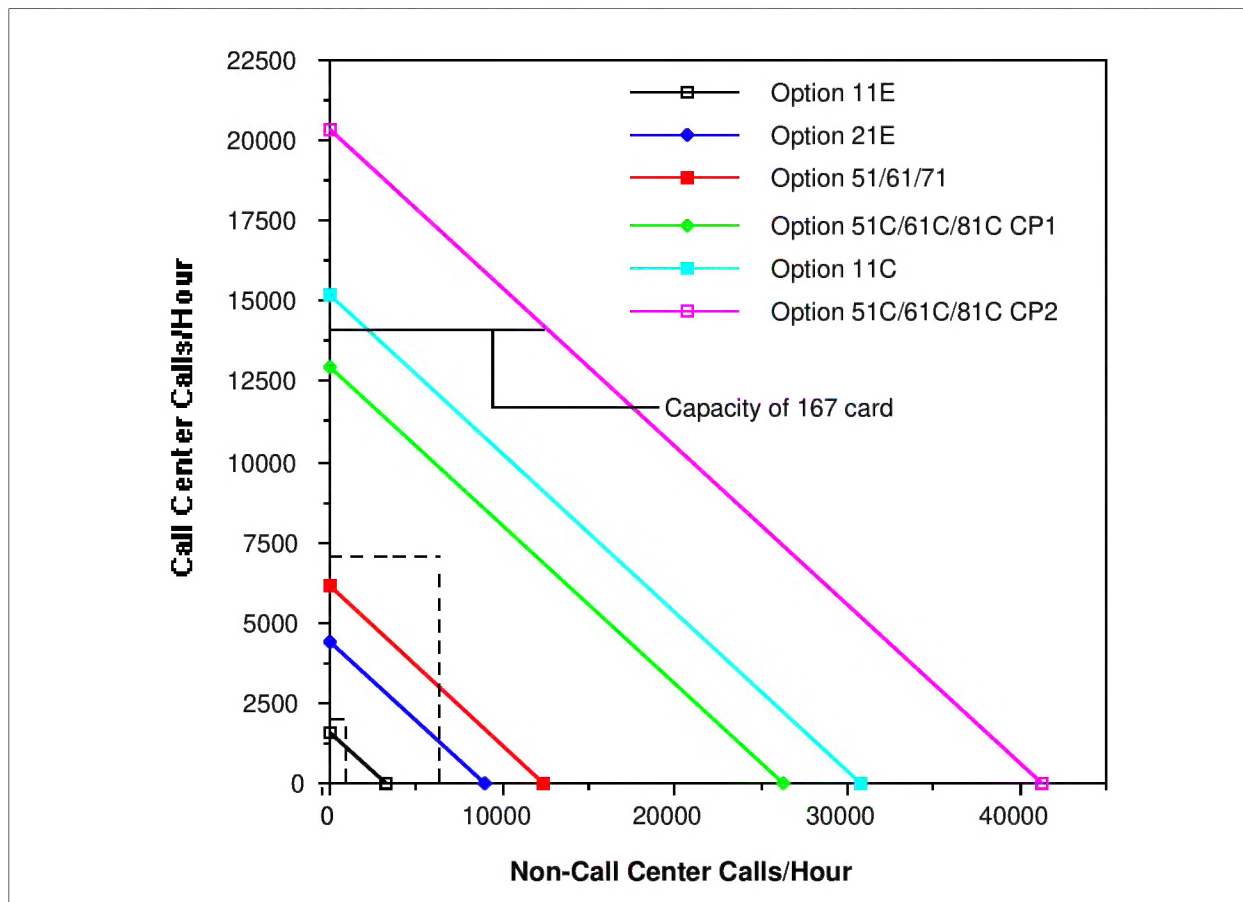
On Figure 4, draw a vertical line through 6,000 non-call-center calls point on the horizontal axis. Draw a horizontal line through 7,000 call-center calls point on the vertical axis. The point of intersection is in the Option 81 area indicating that an Option 81 is required to handle this configuration.

Example 4

Another application is expected to generate 2,000 call-center calls and 600 non-call-center calls during busy hour. What Meridian 1 option is required?

Draw two lines through points of interest as in the previous example. The intersection point indicates that an Option 21E is required to handle this application.

Figure 4
Meridian 1 real-time capacity for call center calls (CCR/MAX/CDR) and non-call center calls



Call centers using CCR, MAX and incoming CDR

Use Figure 4 or 5 to determine the Meridian 1 Option required for call centers that use CCR for call routing, MAX for call center reporting, and incoming CDR call detail reporting.

If you have estimated the busy-season busy-hour calling rates, draw on Figure 4 a horizontal line depicting the (incoming) calling rates required for the call-center operation and a vertical line depicting the calling rates required for non-call-center users.

If you have estimated only the number of agents and the number of non-call-center users, draw on Figure 5 a horizontal line depicting the number of call-center agents and a vertical line depicting the number of non-call-center users.

Find that point on the chart where the horizontal and vertical lines intersect. The area where the points intersect indicates the type of Meridian 1 option required.

If the lines intersect in the area above the line denoting the highest capacity Meridian 1, a single Meridian 1 cannot handle the capacity. Consult a distributor or Nortel support personnel for alternatives. If the lines intersect above the line labeled "Capacity of 167 Card," a Meridian 1 can handle the capacity, but a single IPE Module or MVME167-equipped Application Module may not. You should refer to Chapter 3, "Engineering the IPE Module and the Application Module."

Example 5

A call center houses 80 ACD agents and 2,000 non-call-center sets. What Meridian 1 option is required to serve it?

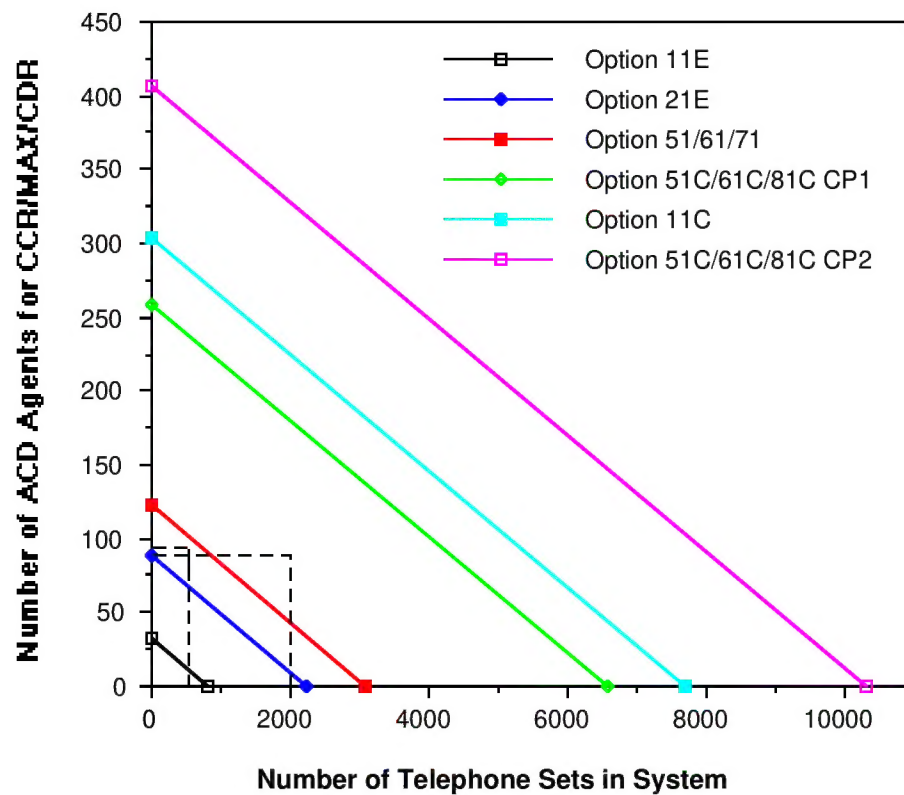
On Figure 5, draw a vertical line through the 2,000 telephone sets point on the horizontal axis. Draw a horizontal line through the 80 ACD agents point on the vertical axis. The point of intersection indicates that an Option 81 is required to handle this configuration.

Example 6

Can an Option 71 switch serve a call-center application (CCR/MAX/CDR) with 90 ACD agents and 500 administrative sets?

On Figure 5, draw lines through these two points of interest on both the vertical and horizontal axes. The point of intersection indicates that an Option 71 is adequate to handle this application.

Figure 5
Meridian 1 real-time capacity for agents and sets (Release 22) with CCR/MAX/CDR



Call centers using Meridian Link only

Use Figure 6 or 7 to determine the Meridian 1 Option required for call centers that use Meridian Link to enable Computer Telephony Integration for inbound calls.

If you have estimated the busy-season busy-hour calling rates, draw on Figure 6 a horizontal line depicting the (incoming) calling rates required for the call-center operation and a vertical line depicting the calling rates required for non-call-center users.

If you have estimated only the number of agents and the number of non-call-center users, draw on Figure 7 a horizontal line depicting the number of call-center agents and a vertical line depicting the number of non-call-center users.

Find that point on the chart where the horizontal and vertical lines intersect. The area where the points intersect indicates the type of Meridian 1 Option required.

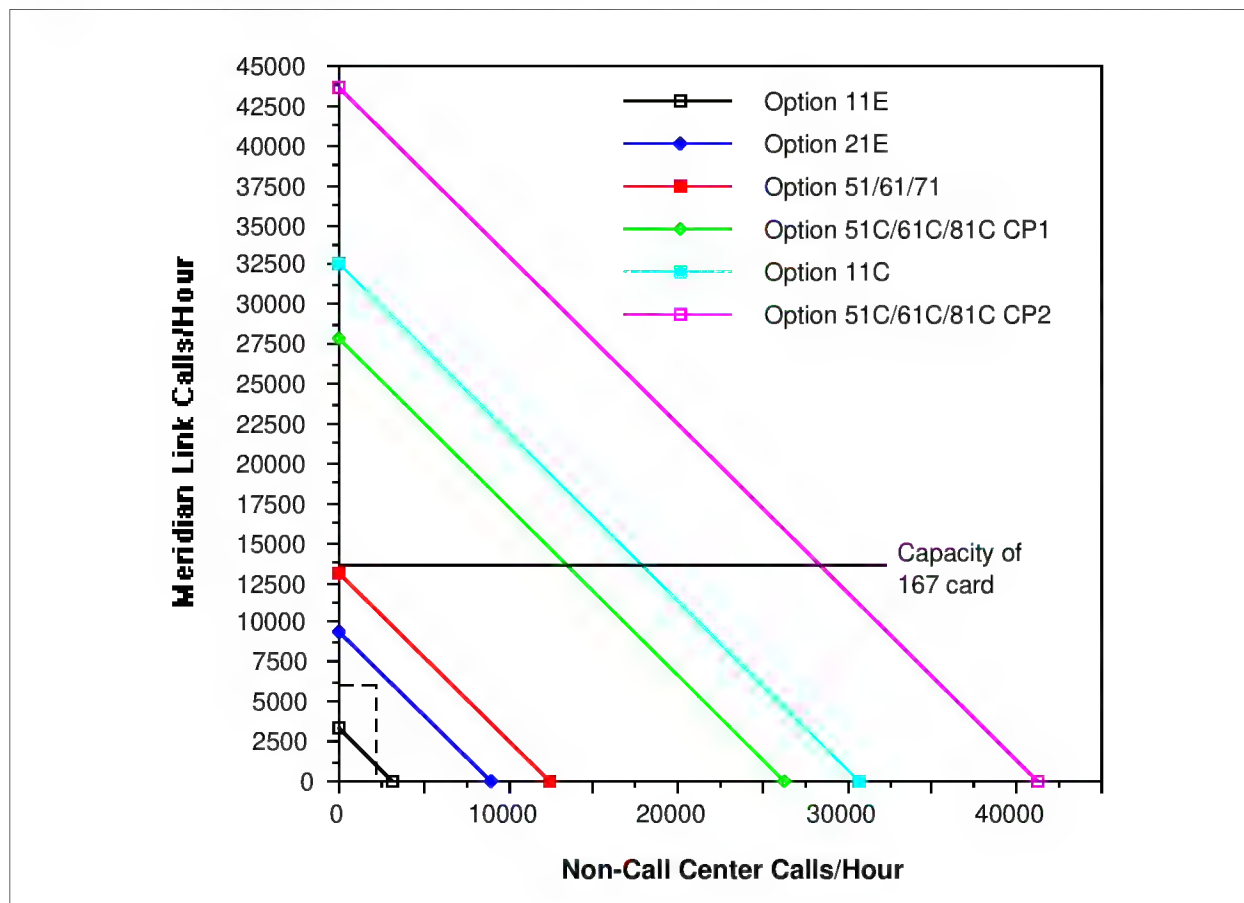
If the lines intersect in the area above the line denoting the highest capacity Meridian 1, a single Meridian 1 cannot handle the capacity. Consult a Nortel representative for alternatives. If the lines intersect above the line labeled "Capacity of 167 Card," a Meridian 1 can handle the capacity, but a single IPE Module or MVME167-equipped Application Module may not. For more information, refer to Chapter 3, "Engineering the IPE Module and the Application Module."

Example 7

A call center is expected to handle 6,000 incoming ACD trunk calls per hour and 2000 non-call-center calls per hour. What Meridian 1 option is required?

On Figure 6, draw a horizontal line through the point on the vertical axis representing 6,000 Meridian Link associated calls. Draw a vertical line through the point representing 2,000 non-call-center calls. The lines intersect in the Option 21E area indicating that an Option 21E is required to handle this configuration.

Figure 6
Meridian 1 real-time capacity for call center calls (Meridian Link) and non-call center calls

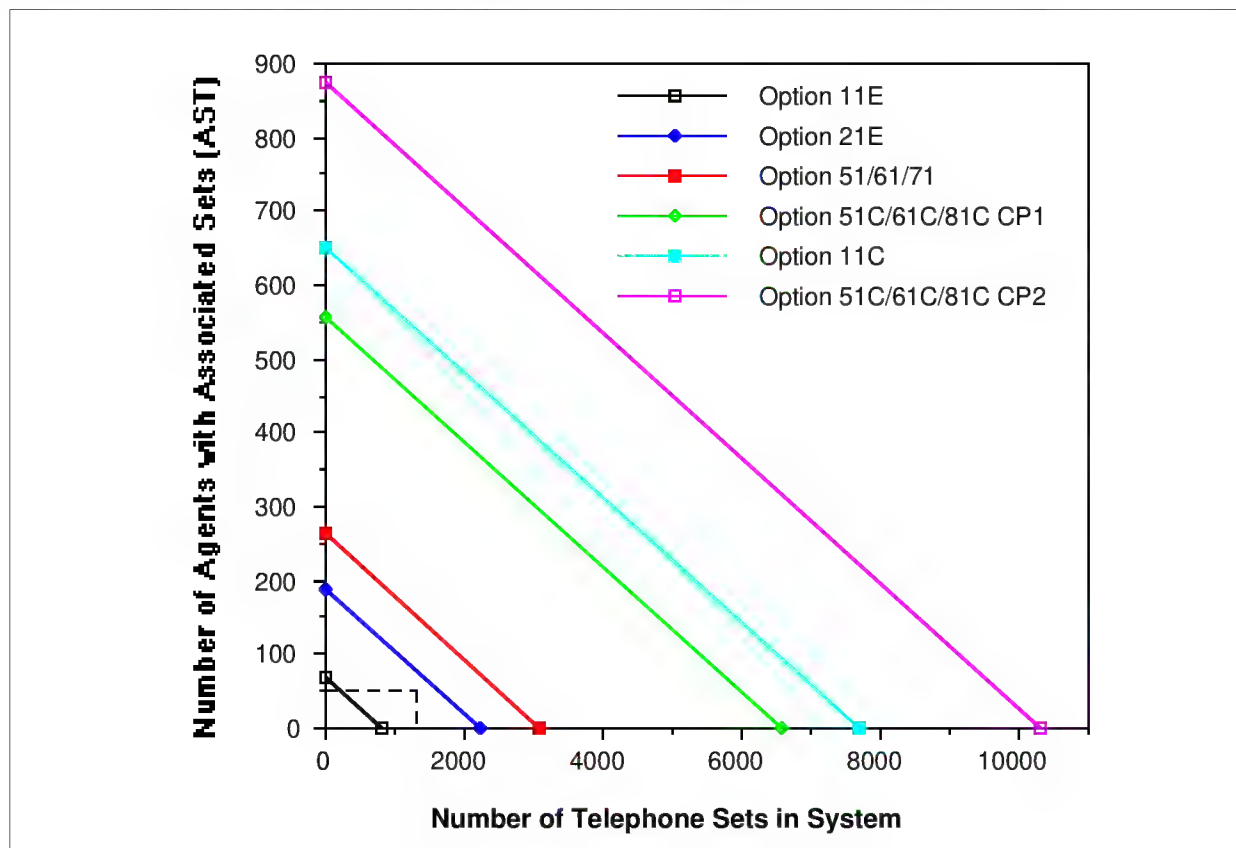


Example 8

A call center has 50 ACD agents with associated sets and 1200 non-call-center telephone sets. What Meridian 1 option is required to service it?

On Figure 7, draw a horizontal line through the point on the vertical axis representing 50 ACD agents. Draw a vertical line through a point on the horizontal axis representing 1200 non-call-center calls. The lines intersect in the Option 21E area indicating that an Option 21E is required to handle this configuration.

Figure 7
Meridian 1 real-time capacity for agents and sets (Meridian Link) (Release 22)



Call centers using Meridian Link for Host Enhanced Routing and Voice Processing

Use Figure 8 or 9 to determine the Meridian 1 Option required for call centers that use Meridian Link to perform host enhanced routing and host enhanced voice processing in addition to host notification on inbound calls.

If you have estimated the busy season busy hour calling rates, draw on Figure 8 a horizontal line depicting the (incoming) calling rates required for the call-center operation and a vertical line depicting the calling rates required for non-call-center users.

If you have estimated only the number of agents and the number of non-call-center users, draw on Figure 9 a horizontal line depicting the number of call-center agents and a vertical line depicting the number of non-call-center users.

Find that point on the chart where the horizontal and vertical lines intersect. The label for the area where the points intersect indicates the Meridian 1 option is required.

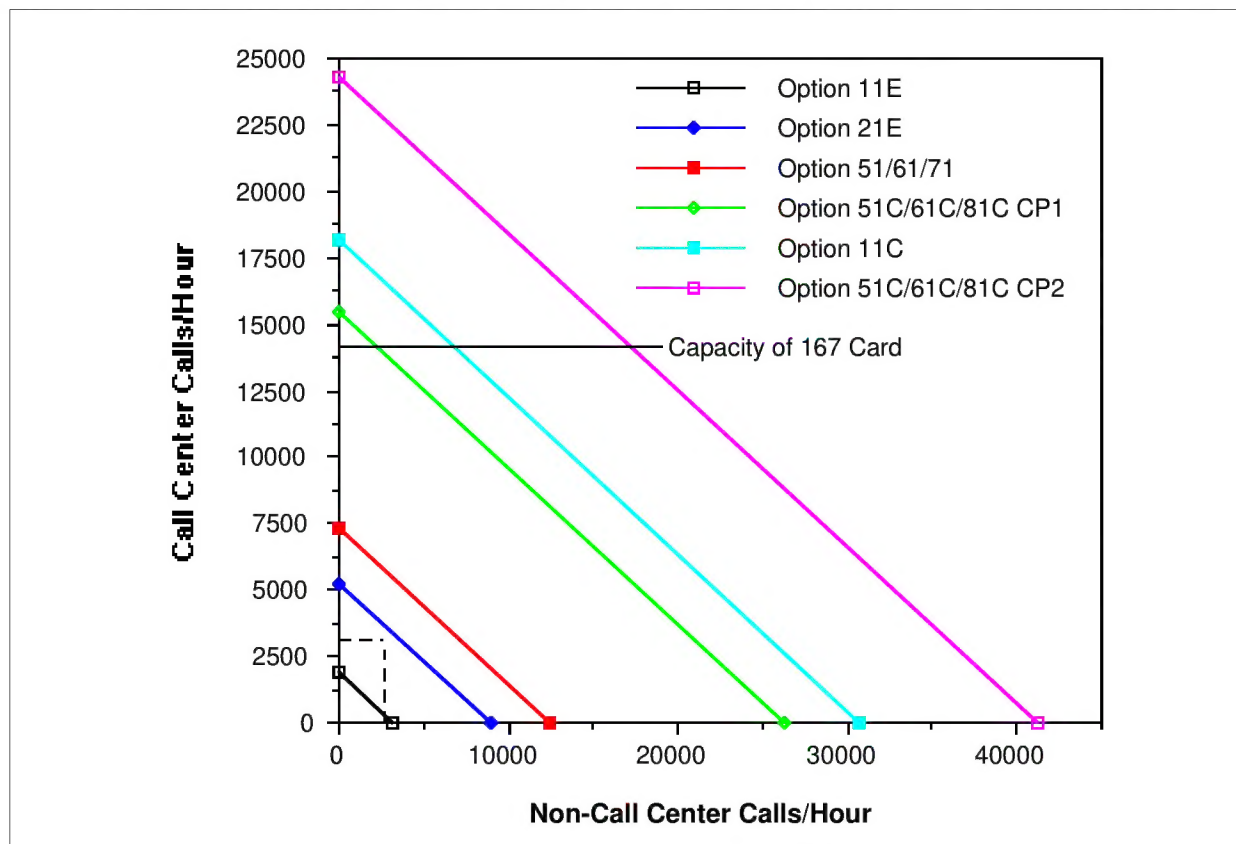
If the lines intersect in the area above the line denoting the highest capacity Meridian 1, a single Meridian 1 cannot handle the capacity. Consult a distributor or Nortel support personnel for alternatives. If the lines intersect above the line labeled "Capacity of an SMM167 or MVME167 Card," a Meridian 1 can handle the capacity, but a single IPE Module or MVME167-equipped Application Module may not. For more information, refer to Chapter 3, "Engineering the IPE Module and the Application Module."

Example 9

A call center is expected to handle 3000 call-center calls per hour and 2500 non-call-center calls per hour. What Meridian 1 option is required?

On Figure 8, draw a horizontal line through the point on the vertical axis representing 3000 call-center calls. Draw a vertical line through the point on the horizontal axis representing 2500 non-call-center calls. The points intersect in the Option 21E area indicating that an Option 21E is required to handle this configuration.

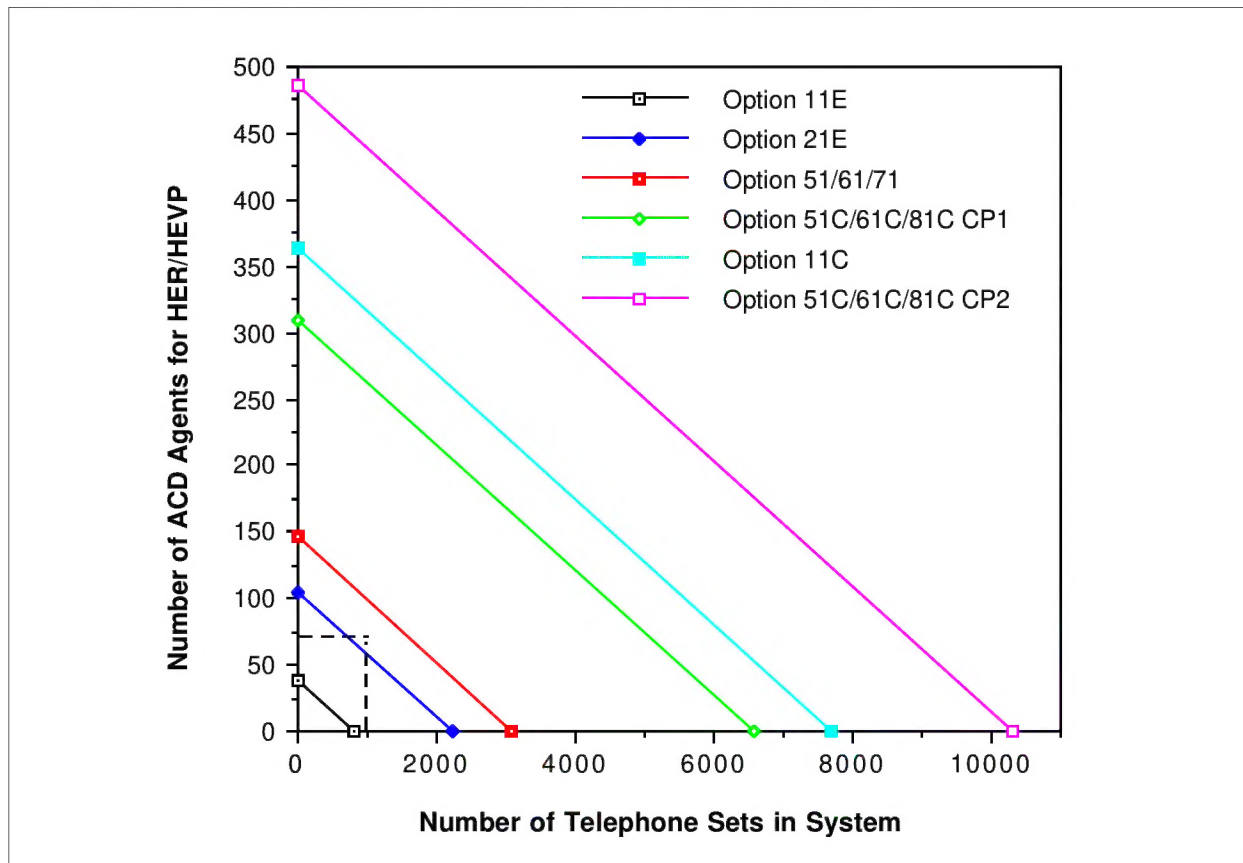
Figure 8
Meridian 1 real-time capacity for call center calls (HER/HEVP) and non-call center calls

**Example 10**

A call center has 70 ACD agents and 1000 non-call-center telephone sets. What Meridian 1 option is required to service it?

On Figure 9, draw a horizontal line through the point on the vertical axis representing 70 ACD agents. Draw a vertical line through a point on the horizontal axis representing 1000 non-call-center calls. The lines intersect in the Option 51 area indicating that an Option 51 is required to handle this configuration.

Figure 9
Meridian 1 real-time capacity for agents and sets with HER/HEVP



For the most conservative scenario with all features active, refer to Figures 10 and 11.

Figure 10

Meridian 1 real-time capacity for most conservative applications with all features active (1)

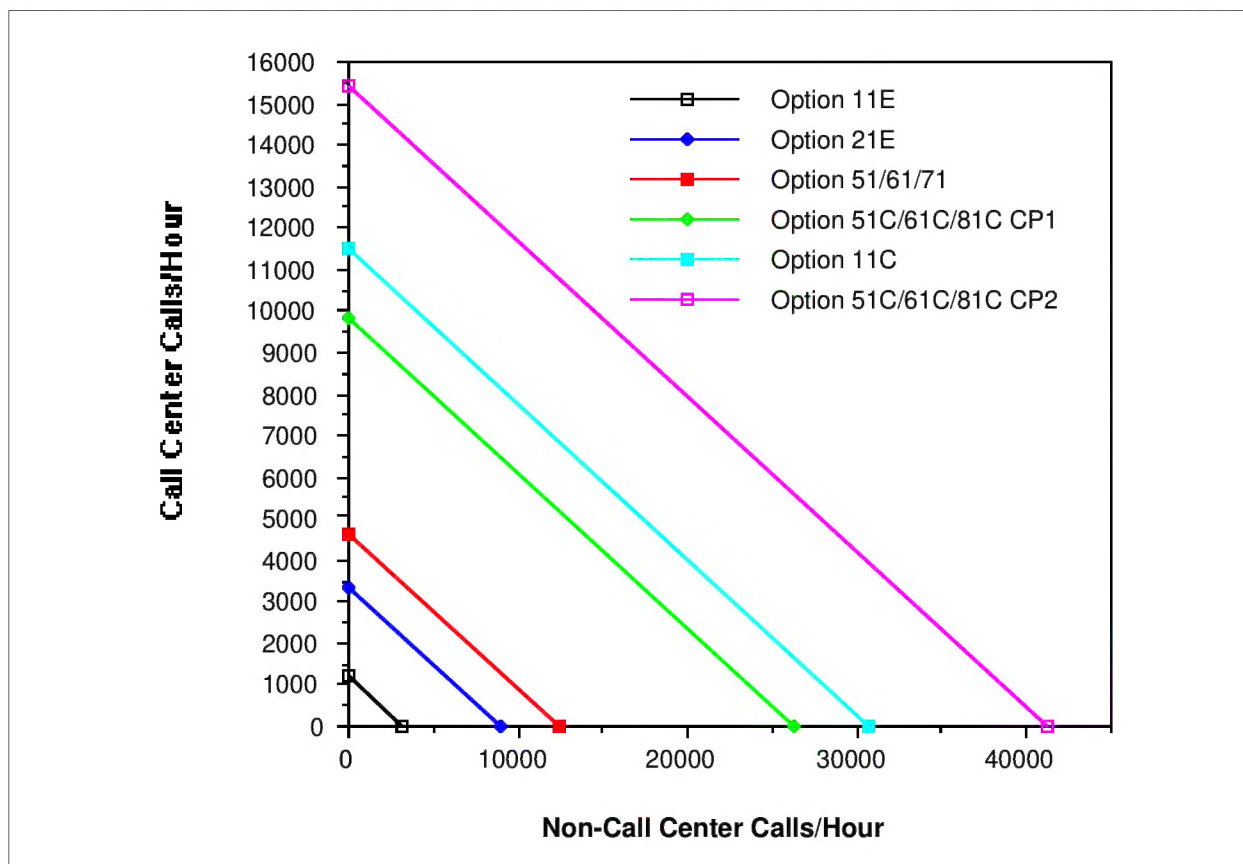


Figure 11
Meridian 1 real-time capacity for most conservative applications with all features active (2)

